

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A LED (light-emitting diode device) comprising:

a substrate provided with a region of the back surface having concentrated dislocations at least on part of the back surface thereof;

a semiconductor element layer formed on the front surface of said substrate;

an insulator film formed on said region of the back surface having said concentrated dislocations; and

a back electrode formed to be in contact with a region of the back surface of said substrate other than said region of the back surface having said concentrated dislocations, wherein

the back electrode is a transparent electrode and light emitted from said LED is emitted outside through said back electrode.

2. (Previously Presented) The LED according to claim 1, wherein

said semiconductor element layer is provided with a region of the front surface having said concentrated dislocations at least on part of the front surface thereof,

said semiconductor device further comprising a front electrode formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations.

3. (Previously Presented) The LED according to claim 1, wherein

said substrate includes a nitride-based semiconductor substrate.

4. (Previously Presented) A LED (light-emitting diode device) comprising:

a semiconductor element layer formed on the front surface of a substrate and provided with a region of the front surface having concentrated dislocations at least on part of the front surface thereof;

an insulator film formed on said region of the front surface having said concentrated dislocations;

a front electrode formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations;

said substrate is provided with a region of the back surface having said concentrated dislocations on at least part of the back surface thereof; and

a back electrode formed to be in contact with a region of the back surface of said substrate other than said region of the back surface having said concentrated dislocations, wherein

the back electrode is a transparent electrode and light emitted from said LED is emitted outside through said back electrode.

5. (Canceled)

6. (Previously Presented) The LED according to claim 4, wherein said substrate includes a nitride-based semiconductor substrate.

7. (Previously Presented) The LED according to claim 4, wherein

the side of said back electrode is provided on a position inwardly separated from the side of said substrate by a prescribed interval.

8. (Previously Presented) The LED according to claim 4, further comprising an insulator film formed on said region of the back surface having said concentrated dislocations.

9. (Previously Presented) A semiconductor device comprising:
a semiconductor element layer formed on the front surface of a substrate and provided with a region of the front surface having concentrated dislocations at least on part of the front surface thereof;

a recess portion formed on a region of the front surface of said semiconductor element layer located inward beyond said region of the front surface having said concentrated dislocations; and

a front electrode formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations, wherein

the semiconductor element layer includes an emission layer located inward beyond the region having the concentrated dislocations and the recess portion is formed between the emission layer and the region having the concentrated dislocations.

10. (Previously Presented) The semiconductor device according to claim 9, wherein said substrate is provided with a region of the back surface having said concentrated dislocations at least on part of the back surface thereof,

said semiconductor device further comprising a back electrode formed to be in contact with a region of the back surface of said substrate other than said region of the back surface having said concentrated dislocations.

11. (Previously Presented) The semiconductor device according to claim 10, further comprising an insulator film formed on said region of the back surface having said concentrated dislocations.

12. (Previously Presented) The semiconductor device according to claim 10, wherein said substrate includes a nitride-based semiconductor substrate.

13. (Previously Presented) A LED (light-emitting diode device) comprising:
a semiconductor element layer formed on the front surface of a substrate and provided with a region of the front surface having concentrated dislocations at least on part of the front surface thereof, said semiconductor element layer consists of a nitride-based semiconductor;
a high resistance region formed in said region of the front surface having said concentrated dislocations, said high resistance region including a carbon introduction layer formed by introducing said carbon; and
a front electrode formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations, wherein

the high resistance region is formed separately from dislocations in order that electric current is difficult to flow through the region having the concentrated dislocations by the high resistance region.

14. (Canceled)

15. (Previously Presented) The LED according to claim 13, wherein
said substrate is provided with a region of the back surface having said concentrated dislocations at least on part of the back surface thereof,

said semiconductor device further comprising a back electrode formed to be in contact with a region of the back surface of said substrate other than said region of the back surface having said concentrated dislocations.

16. (Previously Presented) The LED according to claim 15, further comprising an insulator film formed on said region of the back surface having said concentrated dislocations.

17. (Previously Presented) The LED according to claim 15, wherein
said substrate includes a nitride-based semiconductor substrate.

18. (Currently Amended) A semiconductor device comprising:
a semiconductor element layer formed on the front surface of a substrate and provided with a region of ~~[[the]]~~ a front surface of said semiconductor element layer having concentrated dislocations at least on part of the front surface thereof while including an active layer; ~~[[and]]~~

a front electrode formed to be in contact with a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations, ~~wherein; and~~

a back electrode provided on a back surface of said substrate, wherein

the upper surface of said region of the front surface having said concentrated dislocations is partially removed by a prescribed thickness and located downward beyond said active layer.

19. (Previously Presented) The semiconductor device according to claim 18, wherein said active layer is formed in a region of the front surface of said semiconductor element layer other than said region of the front surface having said concentrated dislocations.

20. (Previously Presented) The semiconductor device according to claim 19, wherein said semiconductor element layer includes a first conductivity type first semiconductor layer formed under said active layer,

said first semiconductor layer includes a first region having a first thickness located inward beyond said region of the front surface having said concentrated dislocations and a second region, including said region of the front surface having said concentrated dislocations, having a second thickness smaller than said first thickness, and

said active layer has a width smaller than the width of said first region of said first semiconductor layer.

21. (Currently Amended) A LED (light-emitting diode device) comprising:

a substrate including a first region having a first thickness and a second region provided with a region of ~~[[the]]~~ a front surface having concentrated dislocations at least on part of the front surface thereof while having a second thickness smaller than said first thickness;

a semiconductor element layer formed on ~~[[said]]~~ a first region of ~~[[the]]~~ a front surface of said substrate other than said second region provided with said region of the front surface having said concentrated dislocations, said semiconductor element layer includes an active layer;
~~[[and]]~~

a front electrode formed to be in contact with the front surface of said semiconductor element layer; and

a back electrode provided on a back surface of said substrate.

22. (Currently Amended) The LED according to claim 21, wherein
said semiconductor element layer includes:

a first conductivity type first semiconductor layer,

~~[[an]]~~ the active layer formed on said first semiconductor layer, and

a second conductivity type second semiconductor layer formed on said active layer.

23. (Previously Presented) The LED according to claim 22, wherein
said active layer has a width smaller than the width of said first semiconductor layer.

24. (Currently Amended) A semiconductor device comprising:

a substrate provided with a region of ~~[[the]]~~ a front surface having concentrated dislocations at least on part of the front surface thereof;

a first selective growth mask formed on a region of the front surface of said substrate located inward beyond said region of the front surface having said concentrated dislocations with a width smaller than the width of said region of the front surface having said concentrated dislocations;

a semiconductor element layer formed on a region of the front surface of said substrate other than a region formed with said first selective growth mask; [[and]]

a front electrode formed to be in contact with a portion of [[the]] a front surface of said semiconductor element layer located inside said first selective growth mask; and

a back electrode provided on a back surface of said substrate.

25. (Previously Presented) The semiconductor device according to claim 24, further comprising a second selective growth mask formed on a region located outward beyond said first selective growth mask at a prescribed interval from said first selective growth mask.

26. (Previously Presented) The semiconductor device according to claim 25, wherein said second selective growth mask is formed on said region of the front surface having said concentrated dislocations.

Claims 27-29 (Canceled)